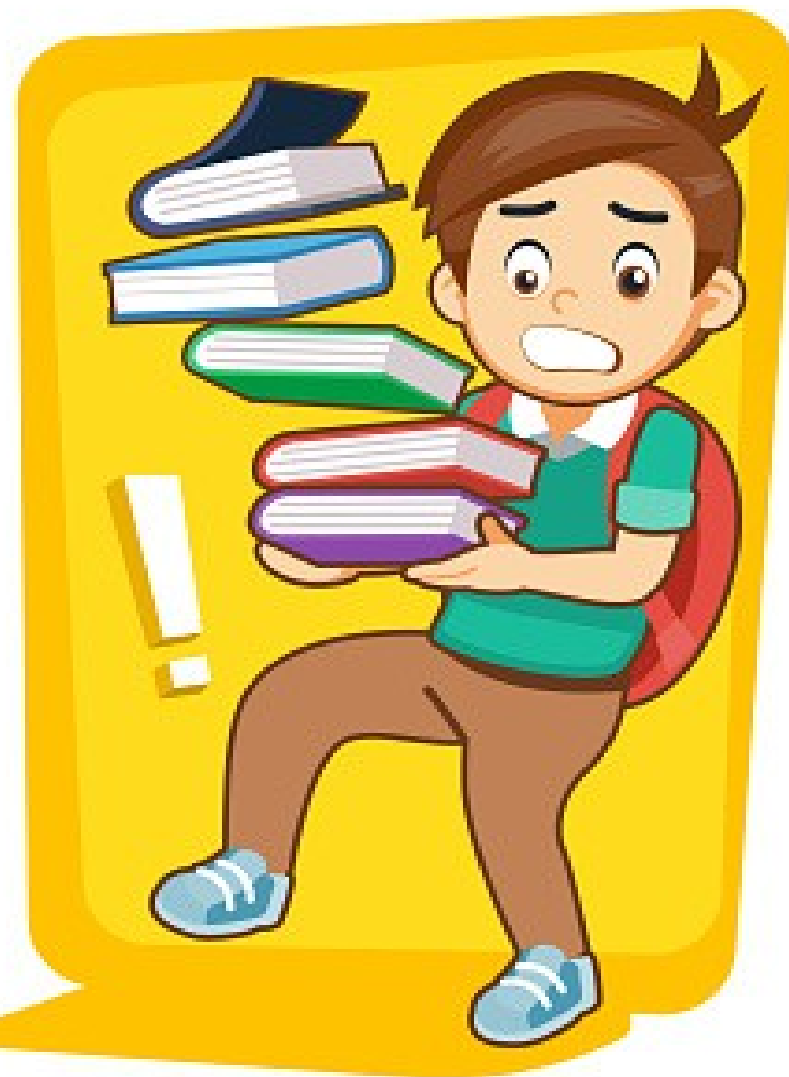# Webservice Testing and Performance Testing Using JMeter

Webservice Testing

- To ensure the quality of the software product different tests has been performed.
- Once such test is Load Testing.
- Load Testing is a kind of Performance Testing that helps in determining how the application behaves when multiple users/requests hit the application simultaneously.
- From many tools helping us to resolve this, for now we will see how Apache JMeter (JMeter) an Open Source tool helps us to achieve this, what are the pros and cons using this tool.

About JMeter

- JMeter is an Open Source testing desktop based application. It is 100% pure Java application used as a performance testing tool for analysing and measuring the performance in variety of graphical reports.

- We can perform load testing, stress testing and **functional** testing for the applications.

- If there are any flaws in application such as buffer overflow, memory leaks using this we can easily simulate the situation in our own environment, and avoid the Prod issue surprises.

- Using JMeter we can achieve all this easily, with minimum to no knowledge in coding.

Installation

- Please follow the below detailed steps on the installation of JMeter on the respective operating system.

  - Windows & Linux: https://jmeter.apache.org/usermanual/get-started.html

  - Mac: https://psychowhiz.medium.com/install-jmeter-on-mac-25531bc2b2ad

JMeter Supports

JMeter supports following and more types of the applications that can be tested with the tool.

Websites – HTTPS and HTTP

Web services – REST, SOAP and Graphql

Database servers

FTP servers

LDAP servers

Mail servers – SMTP, POP3, IMAP

TCP Servers

Elements of JMeter

- There are different elements in JMeter each performing a task to achieve our goal. Below are few elements which will be important to know perquisites:

  - Thread Group: Collection of Threads, each thread represents one user accessing the application in the thread. Ideally it simulates one real user making one request to the application server. We can have multiple number of threads configured here.

  - Samplers: Type of request, such as FTP, HTTP, etc.

  - Listeners: Shows the results in different formats.

  - Configuration: Setup defaults and variables for later use by the samplers.

  - Assertions: Validate response from the server is expected or not.

Thread Group
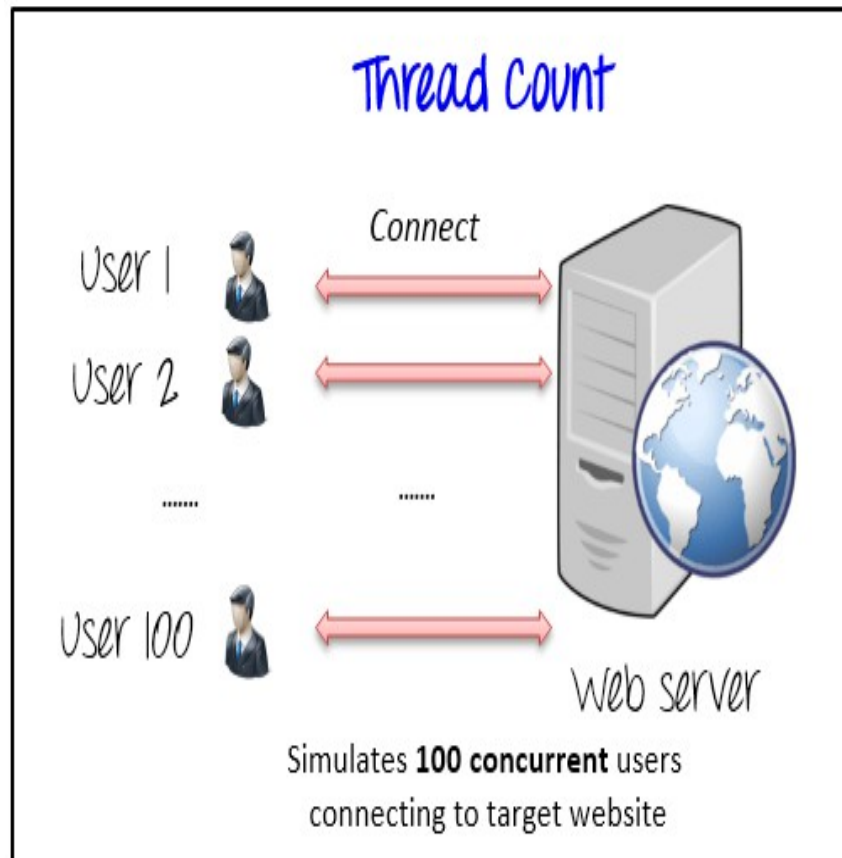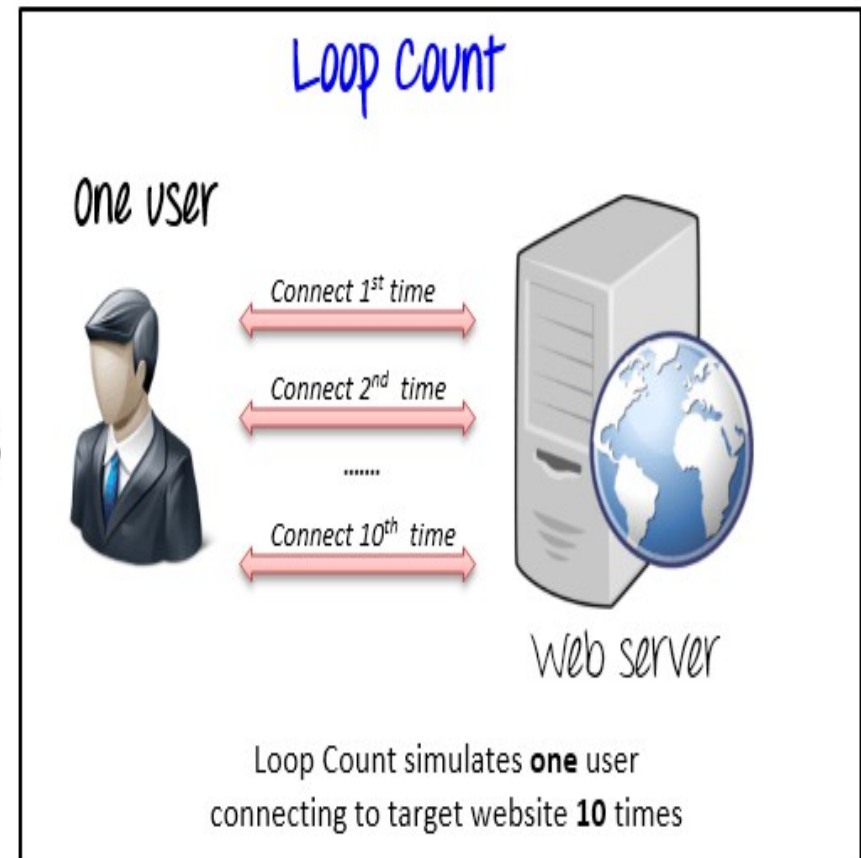
Demo

Pros of Using JMeter

Open Source: JMeter is an open source software, so no licensing costs

Ease to Use: The user can install and use JMeter easily

Platform independent: As JMeter is 100% Java based, so it is platform independent and can run on multiple platforms.

Customisable: Since JMeter is open source, developers can customize its source code as per their specific requirements. Also there is prescript and postscript execution process where we can run customisable code in Java or Jpython.

Data driven testing: The CSV Data Set Config, allows you to read different parameters from text file and convert into parameters which can be used in making dynamic requests.

Record and Playback: JMeter provides record and playback options alone with drag and drop feature which makes it easier and faster to create scripts.

Supports distributed load testing: JMeter supports distributed load testing features in which we can create master-slave setup for carrying out load test on multiple machines. Link is :
https://jmeter.apache.org/usermanual/jmeter_distributed_testing_step_by_step.html

Good community support and Documentation: JMeter has many online tutorials(edureka I really like) and helping community support. It also has freely available plugins that helps in different aspects of script creation and analysis.

Reporting: Helps to visualise test results. As see before, test results can be displayed in a different format such as chart, table, tree, log file, html and etc.

Cons of Using JMeter

- Passwords are saved as plain text, involves risk when the JMX file is accidentally shared

- It supports only Java or Java backed languages for custom coding

- Jpython is support though

Similar Tools

LoadView

LoadUI

NeoLoad

WEBLOAD

LoadRunner

Conclusion

- One of the most used tool for performance and api testing. Definitely can be used to make sure the web applications are meeting the performance benchmarks.

- The feature list of JMeter is exhaustive, this is just a sample of its usage.

- The User Manual will have the detailed description of each its features, link is https://jmeter.apache.org/usermanual/index.html

References

- https://www.edureka.co/blog/load-testing-using-jmeter/

- https://jmeter.apache.org/usermanual/get-started.html

- https://www.guru99.com/jmeter-tutorials.html